The situation and causes of musculoskeletal disorder among nurses in 7A military hospital

Musculoskeletal disorder on 7A military hospital nurses

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Abstract

Aim: Musculoskeletal disorder is one of the most important occupational health issues worldwide and occurs at a high rate in a wide range of professions, including medical nurses who frequently perform physical activities in inappropriate postures. Hence, research on such issues among medical nurses is necessary.
This study assessed the situation of musculoskeletal disorder among the nurses working in the 7A Military Hospital (Ho Chi Minh City, Viet Nam) and the factors related to this issue.
Materials and Methods: This study employed a descriptive, cross-sectional approach on 123 medical nurses working in 7A Military Hospital.
Results: The rate of musculoskeletal disorder among the nurses was 78.0% during the last 12 months and 45.5% during the last 7 days. The most common affected sites were the neck/nape, back, and shoulders. Factors related to the disorder included genders, working hours per week, musculoskeletal condition history and stress level.
Discussion: Heavy works required many movements and carrying heavy weight in inappropriate postures would put an excessive burden on the cervical and lumbar vertebrae leading to musculoskeletal issues in necks and the back. Tiredness and reduced focus resulted from stress and overwork also increased the risk of musculoskeletal disorders. There were issues regarding the correctness of the answers, as they relied on the memory from the past, but the inaccuracies could be mitigated.
Conclusion: This study made a more detailed assessment of the musculoskeletal disorder in the nurses, which laid a foundation for prevention and mitigation solutions for the medical staff and the workers in general.

Keywords

Musculoskeletal disorder; Medical nurses; Nordic questionnaire

Introduction

Musculoskeletal disorder is a common disease with an increasing tendency. It is one of the most frequent health issues amongst workers in various professions. Its dramatic rise leads to the name "occupational epidemic of the 1990s" [1] and the International Labour Organization (ILO) (The prevention of occupational diseases. 28 April 2013) regards it as the "hidden epidemic" which needs more attention. Occupational musculoskeletal disorder is highly frequent in medical staff, including medical nurses, with the rate of 28% to 96% within one year of research [2].

Occupational diseases and prevention are becoming the subject of increasing attention in Vietnam, although musculoskeletal disorder still has not been included in insurance of occupational conditions despite their high incidence in several professions. There have been few assessments of the musculoskeletal disorder in medical laborers, especially in medical nurses. An only recent study on these issues among the nurses in Viet Tiep Hospital (Hai Phong), a leading medical facility in the Northern Coastal Region, showed an 81% musculoskeletal disorder rate and a good number of causal factors affected this conditions [3]. The musculoskeletal issue among medical nurses in Hai Phong (and in Vietnam generally), therefore, is probably problematic. However, there has been no research on this condition in the 7A Military Hospital, Ho Chi Minh City. Therefore, to make a comprehensive view of musculoskeletal disorder on the medical nurses, this study was carried out to describe the situation and related factors of musculoskeletal disorder in the nurses working in seven departments of 7A Military Hospital in Ho Chi Minh City.

Material and Methods

Investigated participants

The study was performed on all available medical nurses working in the departments of 7A Military Hospital with the length of service over 12 months. Non-voluntary personnel or personnel who were absent during the period of study were excluded. There were 132 of the total 142 nurses who took part in the investigation.

Date, time and place

The study took place from March 2019 to December 2019 in all departments of 7A Military Hospital.

Study design

The study employed a descriptive, cross-sectional approach for a whole population sampling.

Data collection

The data were collected by interview with a questionnaire. This study used the standard Nordic questionnaire developed by Kuronika et al. (1987) [4] for assessment of musculoskeletal disorder at nine areas of the body, including neck and nape, shoulder, elbow, wrist and hand, back, lumbar, hip and thigh, knee, and ankle and foot. The questionnaire of Kessler et al. (2003) (K6) was employed for the evaluation of mental factors affecting the occurrence of musculoskeletal conditions [5]. Another questionnaire was used for demographics and social data.

Data analysis

The data was input by Epidata 3.0 and processed by SPSS

19.0. Musculoskeletal disorder rate was calculated as the rate of symptom occurrence in at least one body area amongst the nine ones listed in the Nordic questionnaire. The Chi-square test was used to compare two percentage values and statistical significance was achieved with p < 0.05.
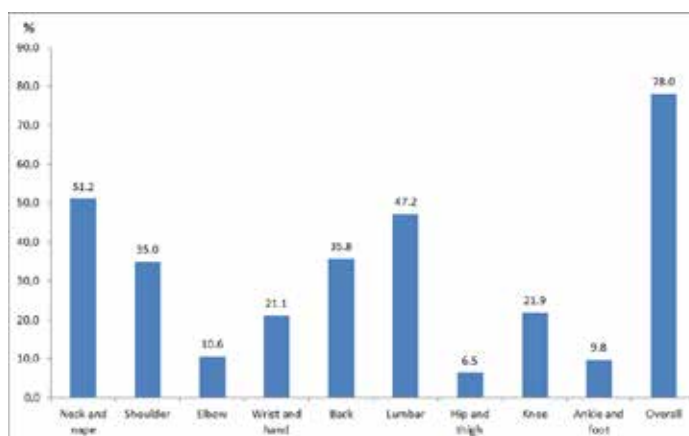
Ethical declaration

The study was done with the agreement of Medicine Scientific Research Ethics Committee of the 7A Military Hospital (Number: 53/QĐ-HĐYĐ-BV7A, date: 26.02.2019). The patients and relatives were well-informed about their conditions and equal treatment and were asked to take part in the study. The participation was strictly voluntary, verified by signed documents.

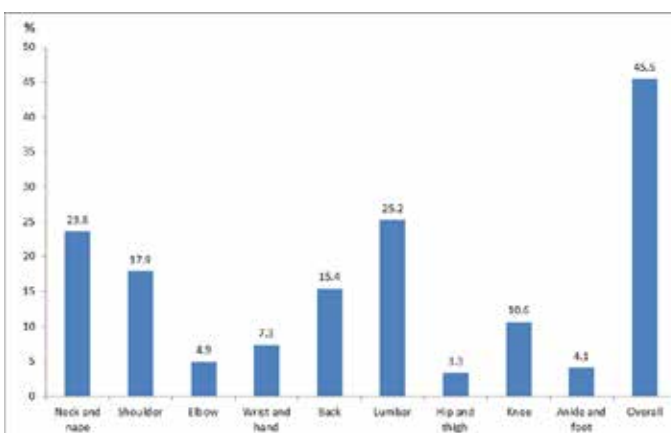This study is original and is not published in other scientific journals.

Results

Musculoskeletal disorder occurrence in the nurses in 7A Military Hospital

During the last 12 months, the overall rate of musculoskeletal disorder was 78.0% amongst the investigated nurses (n = 123), with the most commonly affected areas being the neck/nape (51.2%) and lumbar (47.2%). The rate of remaining areas was listed as follows: 35.0% on the shoulder, 10.6% on the elbow, 21.1% on wrist and hand, 35.8% on back, 6.5% on hip and thigh, 21.9% on the knee, and 9.8% on ankle and foot (Figure 1).

Figure 1. Musculoskeletal disorder rates per body area in the investigated nurses during the last 12 months.

Figure 2. Musculoskeletal disorder rates per body area in the investigated nurses during the last 7 days.

During the last 7 days, the overall rate of musculoskeletal disorder was 45.5% amongst the investigated nurses (n = 123), with the most commonly affected areas being also the neck/nape (23.6%) and lumbar (25.2%). The rate of remaining areas was listed as follows: 17.9% on the shoulder, 4.9% on the elbow, 7.3% on wrist and hand, 15.4% on back, 3.3% on hip and thigh, 10.6% on the knee, and 4.1% on ankle and foot (Figure 2).

Factors related to the musculoskeletal disorder in the medical nurses

In this study, genders, working time per week over 40 hours, historical musculoskeletal conditions and stress were shown to be the major factors related to musculoskeletal disorder in the nurses with statistical significance (p < 0.05). The detailed data were presented in Table 1.

Table 1. Factors related to musculoskeletal disorder in medical nurses.

Variables		Musculoskeletal disorder			OR (CI 95%)	p
		Yes	No	Total		
		n	n	n		
Age	< 45	11	3	14	1.3 (0.6-2.7)	0.786
	≥ 45	85	24	109		
Gender	Female	85	21	106	2.2 (1.1-3.9)	0.035
	Male	11	6	17		
Obesity	Yes	15	4	19	1.2 (0.5-2.0)	0.539
	No	81	23	104		
Working hours per week	> 40	54	11	65	1.8 (1.1-3.1)	0.019
	≤ 40	42	16	58		
Musculoskeletal conditions history	Yes	18	2	20	4.4 (1.6-12.7)	0.005
	No	78	25	103		
Working days per week	> 2 days	1	1	2	0.7 (0.1-8.1)	0.638
	≤ 2 days	95	26	121		
Stress	Yes	56	11	67	1.8 (1.2-3.2)	0.012
	No	40	16	56		

Discussion

Musculoskeletal disorder occurrence in the nurses in 7A Military Hospital

Musculoskeletal disorder occurred in 78.0% of the nurses within the last 12 months and 45.5 of the nurses within the last 7 days, which was lower than in the study by Kieu et al. (2015) (85% amongst the nurses in Viet-Tiep Hai Phong Hospital) [3]. The reason probably was since Viet Tiep is the largest provincial hospital within Hai Phong hence the amount and severity of the patient cases were high, hence the workload and stress on the nurses there were also higher than in other hospitals. Our results were similar to other researches worldwide such as Chung et al. (2013) (76.2% amongst 3915 Taiwan nurses) [6], Tinubu et al. (2010) (78% of the nurses in Ibadan, Nigeria) [7], and Yan et al. (2016) (79.5% in Xinjiang, China) [8].

The two most commonly affected areas in this study were the neck and nape, and the back (51.2%, and 47.2% within the last 12 months, respectively). The reason was due to the constant large weight burdened by the cervical vertebrae (carrying the head) and the lumbar vertebrae (carrying the body upper half). Heavy works required many movements and carrying heavy

weight in inappropriate postures would put an excessive burden on the cervical and lumbar vertebrae leading to musculoskeletal issues in these two areas. Our study results were comparable to other researches such as Asghar et al. (2016) in Lahore, Pakistan (49.7% had issues in the lumbar and 35.4% had symptoms in the shoulder) [9]. Tinubu et al. (2010) in Ibadan, Nigeria reported 44.1% had issues in the low back [7]. Other studies even observed a higher rate in the lumbar such as Smith et al. (2006) in Japan (71.3%) [10], Yan et al. (2016) in Xinjiang, China (64.83%) [8], and Attar (2014) in Jeddah, Saudi Arabia (65.7%) [11]. Our rate in the neck and nape area was also similar to the study of Mehrdad et al. (2010) in Iran (46.3%) [12], Smith et al. (2004) in China (42.8%) [13], and Amin et al. (2014) in Malaysia (48.94%) [14].

Factors related to the musculoskeletal disorder in the medical nurses

Ages: There was no significant correlation (p > 0.05) between age groups and musculoskeletal conditions, similar to the results of Kieu et al. (2015) [3]. Musculoskeletal conditions tend to take place in people aged over 45 due to aging and weakening muscles, bones, joints, and tendons. Joint erosion, reduced blood supply, lack of nutrition and functional decline negatively affect the musculoskeletal system and raise the risk of issues.

Genders: there was a significant correlation (p < 0.05) between genders and musculoskeletal disorders, similar to the results of Wijnhoven et al. (2006) in which the issue in females (45%) was more frequent than in males (39%) [15] since female nurses had lower adaptation in activities related to the patients such as patient movements and transfusion.

Obesity: There was no significant correlation (p > 0.05) between obesity and musculoskeletal disorders similar to the results of Kieu et al. (2015) [3], but different from Minghelli et al. (2015) in which concluded that obesity had a relationship with musculoskeletal disorders [16]. The reason was due to the excessive body weight which caused excessive corresponding mechanical and transmission pressure on the musculoskeletal system leading to higher risks of damages.

Working hours per week: There was a significant correlation (p < 0.05) between working hours per week and musculoskeletal disorders. Working over 40 hours a week or other excessive time amount increased risk exposure since there was inadequate rest for musculoskeletal recovery, which constantly strained and exhausted the muscles, resulted in a higher rate of injuries and conditions.

Musculoskeletal disease history: There was a significant correlation (p < 0.05) between musculoskeletal disease history and the current situation of musculoskeletal disorders, similar to the results of Kieu et al. (2015) [3].

Working days per week: There was no observed significant correlation (p > 0.05) between working hours per week and musculoskeletal disorders.

Stress: There was a significant correlation (p < 0.05) between stress and musculoskeletal disorders, which is compatible with the study of Amin et al. (2014) on 376 nurses in Klang Hospital, Malaysia [14]. Common daily stress included overworking (> 8 hours/day), high workload and work length, high exposure of pathogens, high risks of injuries, and attitudes of the patients

and their relatives. Tiredness and reduced focus were the results, which also increased risks of musculoskeletal disorders.

Limitations and meaning of the study

Our study suffered from certain limitations. The data were collected via a Nordic questionnaire without a physical examination of the musculoskeletal conditions of the participants. The memory of the past events within the last 12 months probably had certain errors and inaccuracies, the answers of the participants were not completely reliable. To reduce inaccuracies, data collection was performed meticulously, especially the symptoms of musculoskeletal disorders, the aims, meaning, and importance of our study was emphasized. The Nordic questionnaire was a standard and popular questionnaire worldwide [17] but there has not been a standard translation for use in Vietnam.

Our study is one of a few works on the job-related musculoskeletal disorder (and musculoskeletal disorder in the medical occupation, in specific) performed on a large scale with a high participation rate. Our sample size is large and representative. Hence, the study results can be evaluated objectively and represent the real musculoskeletal conditions of the medical nurses in Vietnam. This study contributes to the basis for further works in Vietnam on musculoskeletal conditions in specific and occupational health conditions in general.

Conclusion

This study evaluated the situation of musculoskeletal disorder in 123 medical nurses working in the 7A Military Hospital. The results showed that 78.0% of the nurses had musculoskeletal disorder within the last 12 months and 45.5% had within the last 7 days. Musculoskeletal disorders in the medical nurses had correlations with the factors of age, gender, history of musculoskeletal conditions, and stress.

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